

## *Factors Affecting Iranian Nursing Students' Test Anxiety: A Narrative Review*

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### ABSTRACT

**Introduction:** Test anxiety has been considered an obstacle to academic achievement. Compared with other healthcare fields, test anxiety prevalence is higher in nursing students. It can have a negative impact on the career of nursing students in the future. Therefore, this review aimed to determine the effective factors and interventions related to controlling test anxiety in Iranian nursing students.

**Methods:** The keywords including Nursing students, Iran, and Test Anxiety were searched in databases and search engines such as Magiran, SID, Google Scholar, PubMed, and Scopus from 2012 to 2022. Review articles, case-series studies, and letters to the editor were excluded. Two authors were responsible for screening independently.

**Results:** Eventually, 12 studies were included. There were 660 nursing students in this review. The findings indicated that the intervention including aromatherapy, cognitive and metacognitive learning strategies, guided imagery, listening to Holy Quran, problem-solving training, existential methods, and positive self-talk can be effective in reducing test anxiety. As well, the association of test anxiety with academic performance was assessed and there was no relationship between them.

**Conclusion:** Authorities of nursing faculties can consider test anxiety reduction interventions in this study for reducing stress in nursing students. However, studies with larger samples are needed.

**Keywords:** Iran, Nursing Student, Test Anxiety.

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**Crossref Doi:** <https://doi.org/10.36437/irmhs.2023.6.2.A>

### Introduction

Educational years are one of the most important periods in every human's life, which can affect other aspects of life.<sup>1</sup> Anxiety, as a part of every human's life in all societies, is considered a suitable and compatible response. However, the level of test anxiety may vary depending on various factors. Moderate and productive anxiety forces us to make ourselves more durable and

reliable by making timely and appropriate efforts.<sup>2</sup> Physiology of the body can show the consequences of anxiety as stimulating or paralyzing.<sup>3</sup> In the last few decades, anxiety and related disorders have been widely studied. Recent studies have shown that anxiety disorders have the highest frequency in the whole population, and one of the forms of these

disorders is test anxiety.<sup>4</sup> Test anxiety consists of unpleasant emotional experiences and feelings and worry in situations where an individual's performance is evaluated.<sup>5</sup> As a common educational phenomenon, test anxiety has a close relationship with the performance and academic progress and even the future performance of millions of students.<sup>6</sup> Additionally, researchers have shown that some students can learn new things during the semester, but due to anxiety, they do not show their real knowledge during the tests.<sup>7</sup> Therefore, it threatens their mental health and has a negative effect on their efficiency, talent flourishing, personality formation, and social identity. Global studies have reported the prevalence of test anxiety from 11 to 31%. Meanwhile, test anxiety is reported at around 17.6% in Iran.<sup>8</sup> The prevalence of test anxiety in the medical students of Germany and the United States has been reported around 29% and 22%, respectively.<sup>9</sup> As well, test anxiety can be widespread in 30% of all nursing students. Compared with other fields of healthcare, nursing students are more vulnerable to test anxiety.<sup>10</sup> Hence, test anxiety is a global phenomenon which is well recognized in all socio-economic groups.<sup>11</sup>

There are several theories regarding test anxiety. One of them declared that test and test anxiety are two inseparable categories. If anxiety is related to the content of the test, the level of efficiency increases. Otherwise, unrelated anxiety states usually have negative impacts on academic performance during exams.<sup>12</sup> Another theory states that test anxiety is common among students and is considered a serious problem, especially among students. This anxiety manifests itself in different ways in individuals. For instance, increased heart rate, cold fingers, and low blood pressure are the physical and external effects of test anxiety.<sup>13</sup> The third theory declares that test anxiety is a type of mental preoccupation that is characterized by self-doubt and self-depreciation about one's own abilities. It often leads to negative cognitive evaluation, lack of concentration, undesirable physiological reactions, and academic failure.<sup>14</sup> The last theory recognizes test anxiety as an unpleasant and emotional reaction to a special situation in the school or university.<sup>15</sup>

Although studies have provided effective ways to reduce exam anxiety, it is still very common among students. Therefore, considering the importance of controlling test anxiety and its relationship with learning, this review study aimed to determine the effective factors and interventions related to controlling test anxiety in Iranian nursing students.

## Methods

A narrative literature review was conducted to synthesize study methods and results relating to test anxiety in medical students.

## Data Sources

For selecting eligible articles, databases and search engines such as Magiran, SID, Google Scholar, PubMed, and Scopus were searched from 2012 to 2022. The main keywords based on MESH included: Nursing students, Iran, and Test Anxiety.

## Inclusion and Exclusion

Inclusion criteria were as follows: English or Persian full-text articles that have assessed the factors and interventions related to test anxiety in Iranian medical students. Exclusion criteria included the review articles, case-series studies, and a letter to the editor. As well, the studies on other students in healthcare fields were excluded.

The research question was designed based on PICO: P (medical students), I (interventions conducted to reduce anxiety), C (receiving no special intervention), and O (the interventions and factors effective in reducing the test anxiety).

## Data Analysis

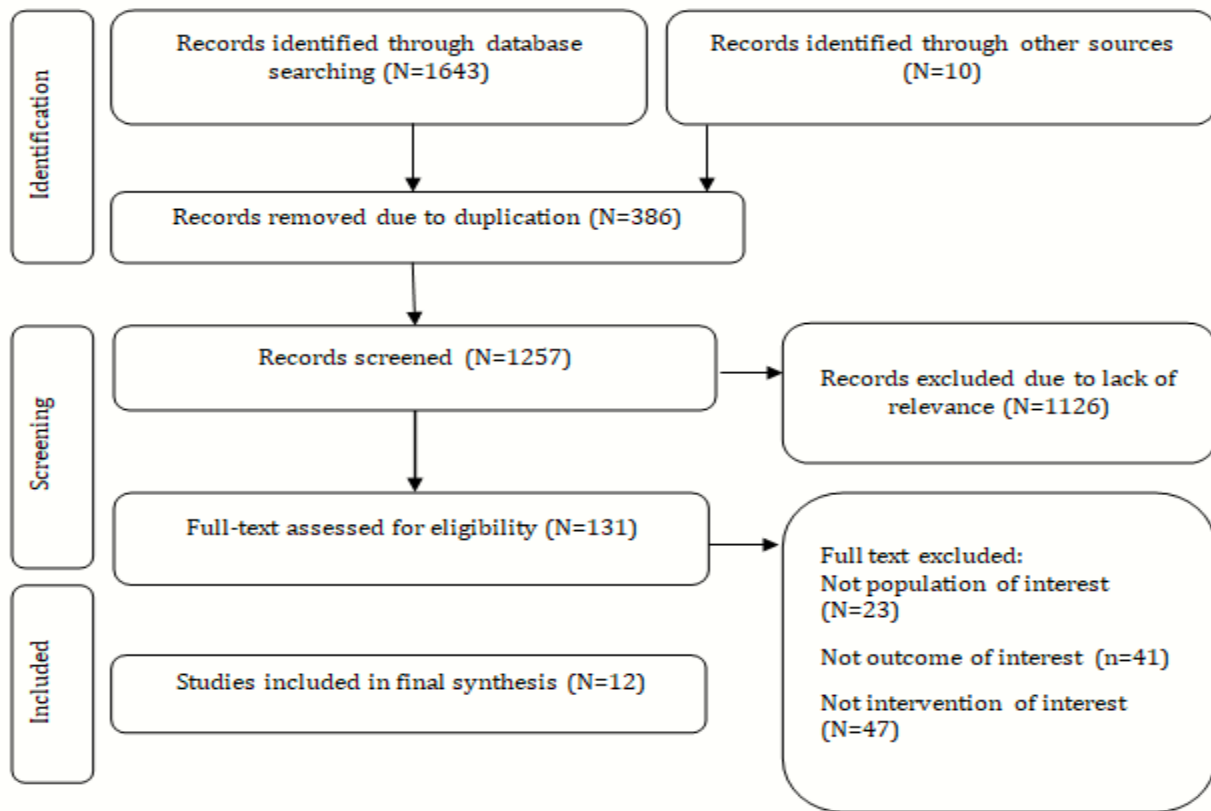
Examination of methodology, keywords, and measured variables was the first step toward the data analysis. The related data, including study purpose, methods, sample size, and main findings were summarized in Table 1. Then, eligible studies were compared and interpreted to recognize themes. Two authors were directly involved in the data analysis process.

## Results

The initial search yielded 1635 records on databases. 1257 records remained after the removal of duplicates. Afterward, 1126 articles

were removed due to lack of relevance. Full-text of 131 articles was assessed. Eventually, 12 studies

were included. The process study selection is shown in Figure 1.



**Figure 1- Flowchart of selected studies**

The sample size was 660. There were eight quasi-experimental, two randomized controlled trial, and two cross-sectional studies in this review. The findings indicated that the intervention including aromatherapy, cognitive and metacognitive

learning strategies, guided imagery, listening to Holy Quran, problem-solving training, existential methods, and positive self-talk can be effective in reducing test anxiety. The details are presented in Table 1.

Authors/year	Purpose	Study Design	Sample Size	Outcome measure	Main Findings
Khosravi et al. (2021)(18)	Determining the effect of aromatherapy on test anxiety	Randomized controlled trial	n=60	Sarason's Test Anxiety Questionnaire	- Minor effect of the intervention on anxiety scores (P=0.049) - No significant difference in the score of anxiety in both groups after the intervention (P=0.049)
Maghaminejad et al. (2020) (9)	Investigating the effects of guided imagery on test anxiety among the freshman nursing students	Randomized controlled trial	n=38	Abolghasemi's Test Anxiety Inventory	- Lower level of test anxiety scores in the intervention group (P=0.05) - No significant alteration in the level of test anxiety in the control group (P=0.55)
Riyazi (2019) (19)	Determining the effectiveness of	quasi-experimental	n=40	Abolghasemi's Test Anxiety	- Significant correlation between training of cognitive and

	training cognitive and metacognitive learning strategies on anxiety test and academic performance			Inventory and Academic Performance Questionnaire	metacognitive learning strategies and decreased level of test anxiety ( $P<0.001$ ) and increased academic performance ( $P<0.001$ )
Jafarbegloo et al. (2018) (10)	Evaluating the effect of inhalation aromatherapy with lavender essential oil on nursing students' level of anxiety	quasi-experimental	n=33	Abolghasemi's Test Anxiety Inventory	- No significant difference between the groups after the intervention ( $P>0.05$ ) - Lower level of anxiety in the intervention group ( $P=0.03$ )
Jafaripur et al. (2018) (20)	To investigate the effect of listening to Holy Quran recitation on OSCE test-anxiety	quasi-experimental	n= 70	State-Trait Anxiety Inventory (STAI)	- Significant reduction of test-anxiety in the intervention group after the intervention ( $P=0.482$ ) - No significant difference between two groups after the intervention ( $P=0.017$ )
Ghamari et al. (2018) (21)	Evaluating the effect of cognitive-behavioral and existential methods on reducing test anxiety	quasi-experimental	n=45	Sarason's Test Anxiety Questionnaire	- Different post-anxiety scores in three groups ( $P=0.01$ ) - Significant reduction of anxiety in the experimental groups after the intervention ( $P=0.002$ )
Farokhi et al. (2018)(22)	Investigating the effect of teaching metacognitive strategies on improving academic achievement and reducing test anxiety	quasi-experimental	n= 40	Abolghasemi's Test Anxiety Scale	- Significant effect of metacognitive strategies on academic achievement of students ( $P<0.001$ ) and reducing test anxiety ( $P<0.001$ )
Pourghane (2016) (17)	Determining the level of test anxiety	Cross-sectional descriptive	n=73	Sarason Test Anxiety Scale	- No significant differences between test anxiety before and during exam ( $P=0.496$ ) - A significant association between the mothers' educational level and students' level of test anxiety ( $P<0.006$ )
Zamani et al. (2017) (23)	Examining the effects of problem-solving training on the nursing student's anxiety	Quasi-experimental	n=83	Cattell anxiety scale	- significant difference between experimental and control groups after receiving problem-solving training ( $P<0.001$ )
Ramezani et al. (2016) (16)	Assessing the relationship between test	Cross-sectional descriptive	n=98	Sarason Test Anxiety Scale	- No significant correlation between anxiety test scores and academic performance ( $P=0.385$ )

	anxiety and academic performance				- Higher level of anxiety in female students (P=0.012)
Sheikh abumasoudi et al. (2015) (24)	Evaluating the effect of objective structured clinical evaluation of direct and indirect supervision on nursing students' test anxiety	Quasi-experimental	n=50	Sarason's Test Anxiety Questionnaire	- A significant reduction in the level of test anxiety after the intervention (P<0/05) - significant difference in anxiety before and after evaluation in both groups (P=0/005)
Salmani (2013) (25)	Investigating the effect of positive self-talk on the level of test anxiety in nursing students	quasi-experimental	n=30	Test Anxiety Inventory (TAI)	- Significant difference between the scores of pre-test and post-test in the intervention group (P<0.001) - No significant difference between the scores of pre-test and post-test in the control group (P>0.05)

**Table 1: Characteristics of Included studies.**

One of the included observational studies in this review showed that there was no association between anxiety test scores and academic performance.<sup>16</sup> Another observational study showed that there is no difference between test anxiety before and during the exam<sup>17</sup>, which shows the importance of interventions to reduce test anxiety.

### Discussion

The current study aimed to discover effective interventions conducted on Iranian nursing students in order to reduce test anxiety among them. Additionally, the association of test anxiety with other factors was examined. Several interventions and associations were effective. The interventions were related to environmental adjustment and behavioral alterations.

It was found that 1-week guided imagery can diminish the level of test anxiety in nursing students. This finding is in line with the previous studies, as they reported that guided imagery can have a positive impact on the test anxiety of nursing students in other parts of the world.<sup>26,27</sup> As well, this method identified as effective in physiotherapy students and school students.<sup>28,29</sup>

However, one study indicated that guided imagery was not as effective as the emotional freedom technique in reducing the score of test anxiety.<sup>29</sup>

Another finding in this study showed that problem-solving training can lead to a decreased level of test anxiety in nursing students. Similarly, another Iranian study on nursing students showed that it can have a positive impact on the level of depression and anxiety.<sup>30</sup> Anxiety is considered one of the important issues in mental health and has a special place in various studies. The processes of problem-solving and creativity are at the highest level of human cognitive activity and are considered one of the most valuable educational goals. Meanwhile, one of the main goals of educational organizations is to create problem-solving ability in students so that these individuals have the ability to deal with new conditions and complex situations.<sup>31</sup> All types of cognitive and behavioral actions are considered problem-solving methods because the individual is taught how to think of the problems.<sup>32</sup> It is proved that problem-solving training can also lead to a higher level of self-efficacy and personal competency.<sup>30</sup>

Nursing students experience a higher level of anxiety than other students. In addition, nursing students express test anxiety as physiological and psychological behavioral changes and abnormalities.<sup>18</sup> The findings of the current study confirmed aromatherapy is effective in reducing the score of test anxiety among nursing students. This is in line with the findings of other studies conducted on Iranian female students, as it confirmed that lavender aromatherapy can diminish the level of test anxiety.<sup>33</sup> Similarly, a systematic review showed that aromatherapy is associated with lower levels of anxiety.<sup>34</sup>

In this review, it was found that training in cognitive metacognitive learning strategies can cause a decrease in the level of test anxiety. Similarly, several studies in Iran and other countries have proved that cognitive and metacognitive learning is effective in moderating stress and anxiety in students.<sup>35-37</sup> Test anxiety causes academic failure through disruption in information processing and retrieval. Teaching this group of strategies helps learners to use these strategies to learn the contents in the best way and to do better in remembering them. The combination of these factors increases self-confidence and reduces anxiety.<sup>38</sup> Also, the findings showed that cognitive and metacognitive learning strategies can cause an improvement in the level of academic performance among nursing students. It is in line with the findings of other studies.<sup>39</sup> Notably, cognitive and metacognitive learning strategies are based on a constructivist approach, which emphasizes the active role of the learner. Hence, the self-efficacy of the learner is improved. By taking advantage of cognitive and metacognitive learning strategies, the learner takes advantage of appropriate approaches to learning.<sup>40</sup>

### Limitations

The inclusion criteria were limited to quantitative and English or Persian articles. Although some studies had methodological flaws, the heterogeneity of included studies was considered in terms of participants, exposure, and desired

outcome. Furthermore, the full text of some eligible was not available. Despite the mentioned limitations, this review presented valuable information on effective interventions to reduce test anxiety in Iranian nursing students.

### Conclusion

Overall, some interventions and strategies were introduced as effective methods of test anxiety reduction in Iranian nursing students. Test anxiety will continue to grow because the academic progression policies are rigorous. Therefore, simple, safe, and inexpensive interventions in Iran were gathered in this review to resist the destructive role of test anxiety in nursing students. The authorities of nursing faculties can teach these techniques to nursing students. Meanwhile, it is recommended to conduct studies with larger samples of nursing students and varied interventions.

### Acknowledgments

The authors of this article are appreciated and appreciated to all those who worked with us.

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**How to cite this Article:** Mohammadamin Jandaghian Bidgoli, Akram Mansouri, Pouriya Darabiyan, Negin Shaterian, Shiva Moradi, Alireza Rafi; *Factors Affecting Iranian Nursing Students' Test Anxiety: A Narrative Review*; *Int. Res. Med. Health Sci.*, 2023; (6-2): 1-9; doi: <https://doi.org/10.36437/irmhs.2023.6.2.A>

**Source of Support:** Nil, **Conflict of Interest:** None declared.

**Received:** 14-03-2023; **Revision:** 27-04-2023; **Accepted:** 15-05-2023